Karl Haapala

List of Publications by Year
in descending order

110 papers	1,979 citations	331670 21 h-index	276875 41 g-index
111 all docs	111 docs citations	111 times ranked	1896 citing authors

#	Article	IF	Citations
1	Prioritizing actions and outcomes for community-based future manufacturing workforce development and education. Journal of Integrated Design and Process Science, 2023, 26, 415-441.	0.5	2
2	Cost and environmental impact assessment of stainless steel microscale chemical reactor components using conventional and additive manufacturing processes. Journal of Manufacturing Systems, 2022, 62, 202-217.	13.9	12
3	Advancing transformative STEM learning: Converging perspectives from education, social science, mathematics, and engineering. Journal of Integrated Design and Process Science, 2022, , 1-22.	0.5	0
4	Making the business case for sustainable manufacturing in small and medium-sized manufacturing enterprises: A systems decision making approach. Journal of Cleaner Production, 2021, 287, 125038.	9.3	21
5	Application of Artificial Intelligence in Incremental Sheet Metal Forming: A Review. Procedia Manufacturing, 2021, 53, 606-617.	1.9	6
6	Leveraging Open-Source Tools for Collaborative Macro-energy System Modeling Efforts. Joule, 2021, 5, 507.	24.0	1
7	Economic risk analysis for the capture of a distributed energy resource using modular chemical process intensification. Journal of Advanced Manufacturing and Processing, 2021, 3, .	2.4	1
8	Specialty chemicals production case study: Economic analysis of modular chemical process intensification versus conventional <scp>stickâ€built</scp> approaches. Journal of Advanced Manufacturing and Processing, 2021, 3, .	2.4	2
9	Development and Implementation of a Framework for Adaptive Undergraduate Curricula in Manufacturing Engineering. Smart and Sustainable Manufacturing Systems, 2021, 5, 60-79.	0.7	3
10	Improving worker health and safety in wire arc additive manufacturing: A graph-based approach. Procedia CIRP, 2020, 90, 461-466.	1.9	5
11	Cost and Environmental Impact Assessment of Stainless Steel Microreactor Plates using Binder Jetting and Metal Injection Molding Processes. Procedia Manufacturing, 2020, 48, 311-319.	1.9	8
12	Leveraging Open-Source Tools for Collaborative Macro-energy System Modeling Efforts. Joule, 2020, 4, 2523-2526.	24.0	18
13	Characterising the sustainability performance of cyclic manufacturing processes: a hybrid manufacturing case. International Journal of Sustainable Manufacturing, 2020, 4, 216.	0.3	0
14	Systematic manufacturability evaluation using dimensionless metrics and singular value decomposition: a case study for additive manufacturing. International Journal of Advanced Manufacturing Technology, 2020, 115, 715.	3.0	10
15	Reusable unit process life cycle inventory for manufacturing: metal injection molding. Production Engineering, 2020, 14, 707-716.	2.3	11
16	Industrial Sustainability: Reviewing the Past and Envisioning the Future. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2020, 142, .	2.2	24
17	Defining Near-Term to Long-Term Research Opportunities to Advance Metrics, Models, and Methods for Smart and Sustainable Manufacturing. Smart and Sustainable Manufacturing Systems, 2020, 4, 1-24.	0.7	15
18	Characterising the sustainability performance of cyclic manufacturing processes: a hybrid manufacturing case. International Journal of Sustainable Manufacturing, 2020, 4, 216.	0.3	0

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19	An Open Online Product Marketplace to Overcome Supply and Demand Chain Inefficiencies in Times of Crisis. Smart and Sustainable Manufacturing Systems, 2020, 4, 20200055.	0.7	6
20	Defining Near-Term to Long-Term Research Opportunities to Advance Metrics, Models, and Methods for Smart and Sustainable Manufacturing. Smart and Sustainable Manufacturing Systems, 2020, 4, .	0.7	2
21	Technical and economic feasibility of solar flat-plate collector thermal energy systems for small and medium manufacturers. Applied Energy, 2019, 254, 113649.	10.1	44
22	Probabilistic Modelling of Defects in Additive Manufacturing: A Case Study in Powder Bed Fusion Technology. Procedia CIRP, 2019, 81, 956-961.	1.9	9
23	Towards sustainable manufacturing by extending Manufacturing Execution System functions. , 2019, , .		0
24	Visual Communication Methods and Tools for Sustainability Performance Assessment: Linking Academic and Industry Perspectives. Procedia CIRP, 2019, 80, 215-220.	1.9	11
25	A Grey Box Software Framework for Sustainability Assessment of Composed Manufacturing Processes: A Hybrid Manufacturing Case. Procedia CIRP, 2019, 80, 440-445.	1.9	2
26	Tracing the Interrelationship between Key Performance Indicators and Production Cost using Bayesian Networks. Procedia CIRP, 2019, 81, 500-505.	1.9	12
27	Optimizing a sustainable logistics problem in a renewable energy network using aÂgenetic algorithm. Opsearch, 2019, 56, 73-90.	1.8	20
28	A questionnaire-based methodology to assist non-experts in selecting sustainable engineering analysis methods and software tools. Journal of Cleaner Production, 2019, 229, 528-541.	9.3	11
29	Investigation of the combined efficiency of a solar/gas hybrid water heating system. Applied Thermal Engineering, 2019, 149, 1035-1043.	6.0	22
30	Synergizing Product Design Information and Unit Manufacturing Process Analysis to Support Sustainable Engineering Education. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2019, 141, .	2.2	9
31	A cyberlearning platform for enhancing undergraduate engineering education in sustainable product design. Journal of Cleaner Production, 2019, 211, 730-741.	9.3	20
32	Graph-Based Metamodeling for Characterizing Cold Metal Transfer Process Performance. Smart and Sustainable Manufacturing Systems, 2019, 3, 20190026.	0.7	5
33	Validating the Sustainability of Eco-Labeled Products Using a Triple-Bottom-Line Analysis. Smart and Sustainable Manufacturing Systems, 2019, 3, 20190022.	0.7	3
34	Fermentation and distillation of cheese whey: Carbon dioxide-equivalent emissions and water use in the production of whey spirits and white whiskey. Journal of Dairy Science, 2018, 101, 2963-2973.	3.4	20
35	Research directions for an open unit manufacturing process repository: A collaborative vision. Manufacturing Letters, 2018, 15, 71-75.	2.2	15
36	A Sustainability Assessment Framework for Dynamic Cloud-based Distributed Manufacturing. Procedia CIRP, 2018, 69, 136-141.	1.9	13

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37	Benchmarking Undergraduate Manufacturing Engineering Curricula in the United States. Procedia Manufacturing, 2018, 26, 1378-1387.	1.9	8
38	Integration of Sustainability Indicators and the Viable System Model Towards a Systemic Sustainability Assessment Methodology. Systems Research and Behavioral Science, 2018, 35, 564-587.	1.6	5
39	Energy and carbon footprint reduction during textile-based product design and manufacturing. International Journal of Strategic Engineering Asset Management, 2018, 3, 109.	0.6	1
40	Characterizing the influence of resource-energy-exergy factors on the environmental performance of additive manufacturing systems. Journal of Manufacturing Systems, 2018, 48, 87-96.	13.9	39
41	A mixed biomass-based energy supply chain for enhancing economic and environmental sustainability benefits: A multi-criteria decision making framework. Applied Energy, 2017, 206, 1088-1101.	10.1	79
42	Environmental Performance Evaluation of Direct Metal Laser Sintering through Exergy Analysis. Procedia Manufacturing, 2017, 10, 957-967.	1.9	10
43	Enabling Non-expert Sustainable Manufacturing Process and Supply Chain Analysis During the Early Product Design Phase. Procedia Manufacturing, 2017, 10, 1097-1108.	1.9	15
44	A Desktop Application for Sustainability Performance Assessment of Composed Unit-Based Manufacturing Systems. , 2017, , .		1
45	Translating Constructionist Learning to Engineering Design Education. Journal of Integrated Design and Process Science, 2017, 21, 3-20.	0.5	9
46	Comparing the Sustainability Performance of Metal-Based Additive Manufacturing Processes. , 2017, , .		1
47	A review and future directions in techno-economic modeling and optimization of upstream forest biomass to bio-oil supply chains. Renewable and Sustainable Energy Reviews, 2017, 67, 15-35.	16.4	106
48	Enabling Cyber-Based Learning of Product Sustainability Assessment Using Unit Manufacturing Process Analysis. , 2017, , .		5
49	Understanding the Sustainability of Eco-Labeled Products When Compared to Conventional Alternatives. , 2017, , .		1
50	Simultaneous Consideration of Unit Manufacturing Processes and Supply Chain Activities for Reduction of Product Environmental and Social Impacts. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2016, 138, .	2.2	25
51	An Approach to Compare Sustainability Performance of Additive and Subtractive Manufacturing During Process Planning. , 2016, , .		3
52	Reducing Greenhouse Gas Emissions for Sustainable Bio-Oil Production Using a Mixed Supply Chain. , 2016, , .		4
53	Using Industry Focus Groups and Literature Review to Identify Challenges in Sustainable Assessment Theory and Practice. , 2016, , .		4
54	Composability of Unit Manufacturing Process Models for Manufacturing Systems Analysis. , 2016, , .		1

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55	Environmental Performance Evaluation of a Fast Mask Image Projection Stereolithography Process Through Time and Energy Modeling. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2016, 138, .	2.2	21
56	A Pedagogical Module Framework to Improve Scaffolded Active Learning in Manufacturing Engineering Education. Procedia Manufacturing, 2016, 5, 1128-1142.	1.9	20
57	Terminology to support manufacturing process characterization and assessment for sustainable production. Journal of Cleaner Production, 2016, 139, 986-1000.	9.3	49
58	An economic and environmental assessment model for microchannel device manufacturing: part 2 â€“ Application. Journal of Cleaner Production, 2016, 120, 146-156.	9.3	21
59	Reducing the cost and environmental impact of integrated fixed and mobile bio-oil refinery supply chains. Journal of Cleaner Production, 2016, 113, 495-507.	9.3	46
60	Directions for instilling economic and environmental sustainability across product supply chains. Journal of Cleaner Production, 2016, 112, 2066-2078.	9.3	45
61	An economic and environmental assessment model for microchannel device manufacturing: part 1 â€“ Methodology. Journal of Cleaner Production, 2016, 120, 135-145.	9.3	24
62	Constructionist Learning for Environmentally Responsible Product Design. , 2015, , 26.398.1.		1
63	Establishing foundational concepts for sustainable manufacturing systems assessment through systems thinking. International Journal of Strategic Engineering Asset Management, 2015, 2, 249.	0.6	11
64	Real-time monitoring and evaluation of energy efficiency and thermal management of data centers. Journal of Manufacturing Systems, 2015, 37, 511-516.	13.9	24
65	A Network Model to Optimize Upstream and Midstream Biomass-to-Bioenergy Supply Chain Costs. , 2015, , .		2
66	Profile of Sustainability in Additive Manufacturing and Environmental Assessment of a Novel Stereolithography Process. , 2015, , .		15
67	Application of Sustainability Assessment to a Novel Plastic Recycling Process. , 2015, , .		1
68	Evaluating the use of zinc oxide and titanium dioxide nanoparticles in a metalworking fluid from a toxicological perspective. Journal of Nanoparticle Research, 2015, 17, 1.	1.9	14
69	An induction hardening process model to assist sustainability assessment of a steel bevel gear. International Journal of Advanced Manufacturing Technology, 2015, 80, 1113-1125.	3.0	9
70	A unit process model based methodology to assist product sustainability assessment during design for manufacturing. Journal of Cleaner Production, 2015, 108, 54-64.	9.3	64
71	Manufacturing Energy Analysis of a Microchannel Heat Exchanger for High-density Servers. Procedia Manufacturing, 2015, 1, 792-803.	1.9	2
72	Integrating sustainable manufacturing assessment into decision making for a production work cell. Journal of Cleaner Production, 2015, 105, 52-63.	9.3	104

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73	Unit Manufacturing Process Models for Ferromagnetic and Non-Ferromagnetic Alloy Surface Inspection Methods. , 2015, , .		0
74	Stability and Biological Responses of Zinc Oxide Metalworking Nanofluids (ZnO MWnFâ„¢) using Dynamic Light Scattering and Zebrafish Assays. Tribology Transactions, 2014, 57, 730-739.	2.0	9
75	Comparative life cycle assessment of 2.0 MW wind turbines. International Journal of Sustainable Manufacturing, 2014, 3, 170.	0.3	69
76	A Software Tool for Unit Process-Based Sustainable Manufacturing Assessment of Metal Components and Assemblies. , 2014, , .		4
77	Gate-to-Gate Sustainability Assessment for Small-Scale Manufacturing Businesses: Caddisfly Jewelry Production. , 2014, , .		3
78	Environmental impacts of integrating wind energy systems and supplemental energy generation and storage systems. International Journal of Sustainable Manufacturing, 2014, 3, 186.	0.3	0
79	Integration of machine learning and mathematical programming methods into the biomass feedstock supplier selection process. , 2014, , .		6
80	A conceptual model for assisting sustainable manufacturing through system dynamics. Journal of Manufacturing Systems, 2013, 32, 543-549.	13.9	58
81	Environmental impact and cost assessment of incineration and ethanol production as municipal solid waste management strategies. International Journal of Life Cycle Assessment, 2013, 18, 1502-1512.	4.7	24
82	Comparison of Sustainability Performance for Cross Laminated Timber and Concrete. , 2013, , .		2
83	A Review of Engineering Research in Sustainable Manufacturing. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2013, 135, .	2.2	272
84	Functional Impact Comparison of Common and Innovative Products. , 2013, , .		3
85	Development and Application of Models for Steelmaking and Casting Environmental Performance. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2012, 134, .	2.2	17
86	A Process-Based Approach for Cradle-to-Gate Energy and Carbon Footprint Reduction in Product Design. , 2012, , .		5
87	Comparison of Environmental Impacts of Innovative and Common Products. , 2012, , .		3
88	Computer-Aided Generation of Modular Designs Considering Component End-of-Life Options: Implications for the Supply Chain. , 2012, , .		2
89	Increasing the Utility of Sustainability Assessment in Product Design. , 2012, , .		5
90	Integrating Sustainability Assessment into Manufacturing Decision Making. , 2012, , 551-556.		10

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91	Cyber Collaboratory-based Sustainable Design Education: A Pedagogical Framework. Journal of Computational Science Education, 2012, 3, 2-10.	0.3	6
92	A Framework for the Evaluation and Redesign of Human Work Based on Societal Factors. , 2012, , 575-580.		3
93	Sustainable Manufacturing Analysis for Titanium Components. , 2011, , .		6
94	Consideration of Manufacturing Processes and the Supply Chain in Product Design. , 2011, , .		0
95	Environmental and Cost Assessment of Several Injection Molded Powder Electronics Packaging Materials. , 2011, , .		1
96	A Review of Engineering Research in Sustainable Manufacturing. , 2011, , .		15
97	A Conceptual Framework for a Sustainable Product Development Collaboratory to Support Integrated Sustainable Design and Manufacturing. , 2011, , .		4
98	Development of a cost model and its application in determining optimal size of a diesel engine remanufacturing facility. CIRP Annals - Manufacturing Technology, 2010, 59, 49-52.	3.6	24
99	Environmental Analysis of Consumer Products During the Conceptual Phase of Product Design. , 2010, , .		0
100	Reducing supply chain costs and carbon footprint during product design. , 2010, , .		3
101	Integrating Life Cycle Assessment Into the Conceptual Phase of Design Using a Design Repository. Journal of Mechanical Design, Transactions of the ASME, 2010, 132, .	2.9	35
102	Addressing Uncertainty in the Environmental Analysis of Nickel Nanoparticle Production. , 2010, , .		1
103	Life Cycle Assessment of Modern Wind Power Plants. , 2010, , .		1
104	An Environmental Analysis of Nanoparticle-Assisted Diffusion Brazing. , 2009, , .		1
105	A comparison of manufacturing and remanufacturing energy intensities with application to diesel engine production. CIRP Annals - Manufacturing Technology, 2008, 57, 5-8.	3.6	167
106	Optimization of Steel Production to Improve Lifecycle Environmental Performance. CIRP Annals - Manufacturing Technology, 2007, 56, 5-8.	3.6	12
107	Infusing sustainability principles into manufacturing/mechanical engineering curricula. Journal of Manufacturing Systems, 2005, 24, 215-225.	13.9	50
108	Design and Development of the 2001 Michigan Tech FutureTruck, a Power-Split Hybrid Electric Vehicle. , 2002, , .		2

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109	Development of Learning Modules for Sustainable Life Cycle Product Design: A Constructionist Approach. , 0, , .		2
110	Board # 72 : Constructionism in Learning: Sustainable Life Cycle Engineering Project (CooL:SLiCE). , 0, , .		0